

CLAIMS

1. System to open/close sheet -formed bodies in particular containers, bags, sacs and the like, made of paper and/or synthetic materials and provided with a closable mouth at one end thereof, said system comprising a clip device consisting of a male element (M) and a female element (F) having at one end thereof a common articulation able to be inserted in an open or uncoupled configuration on a portion or limb of said month, and to lock or seal thereupon assuming a closed or coupled configuration which imprisons said limb portion, characterized by the combination of: - means of articulation acting as a snap-free spring at one of the two ends of said essentially longitudinal elements, formed of continuous protuberances integral with each other and with said elements; - anti-tampering means at the second opposite end of same elements, comprising two small separate tongues each projecting from each element male respectively female; - sealing means resulting from the form-coupling of fixed joints complementary to each other made on/in said (M) and (F) elements; - means to smootly tear cutting made of knurl on the top of one of the flanks of the female element; - possible carrying means to move or transport the container; wherein said multifunctional and highly perfomant clip device is associated to a portion of the container mouth limb, provided with an ad hoc invitation.
2. System according to claim 1, in which said male element has a solid cylindrical shape whereas the female element has an at least partially hollow shape.
3. System according to claim 1, in which the male element has in cross-section the shape of a partially opened pincers.

4. System according to claim 1, in which the female element has a cross section in form of a horse shoe with a central male protrusion penetrating into an empty partially opened portion of the male pincers.
5. System according to at least one of the above claims, in which the top inner portion of one of the female element flanks is in form of a knurl.
6. System according to at least one of the above claims, in which a handle is on the outer back of the female element.
7. System according to at least one of the above claims, in which a reinforcing partial sleeve is on a portion of said female element and has on outer toothed grip.
8. System according to at least one of the above claims, in which the clip male element is inserted on a bag mouth invitation with the aid of pincers, arms and the like whereas the welding of the lips at the ends of the male and female components is carried out by heat-sealing heads even out of line.
9. Method to assembly, de-assembly on/from a container mouth a clip device according to the above claims, comprising the steps of: - providing the container mouth with an invitation; - providing the female element with a reinforcing sleeve and a handle; - opening the clip by separating its male-and female-elements; - applying in correspondence of said invitation the clip device in said opened configuration; - inserting the male element into the female element by forcing to a narrow coupling the penetration of the male element pincers on the central protrusion of the horse shoe shaped female element; - sealing the lips at the free ends of both elements.
10. Apparatus to automatically apply the clip of claims 1 - 8, on the mouth of a container comprising: - a conveyor of formed and filled bags from a packaging

unit; - at least a vibrating - screening container of clips to be fed to a device receiving both said bags and clips and comprising pneumatic pliers to open the male and female elements on arrival of the bags against the clip proximal end; - means to insert said opened clip elements on the bag mouth invitation; and - means to seal the projecting lips.